DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-16 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thomas et al. (U.S. Pat. 5,460,317) in view of Ishigami et al. (U.S. Pat. 6,329,275) and Morikawa et al. (Japan 04-333565).

Regarding claims 1, 7, 8, 11, 12, 18, Thomas et al. teach a plurality of aluminum alloy members having a joint in which the aluminum alloy members have been joined with a friction stir welding method. (See Abstract; Column 3 lines 62-67; Column 4 lines 1-5; Column 4 lines 50-67; Column 5 lines 1-6; Column 7 lines 32-65)

Regarding claim 13, Thomas et al. teach the aluminum alloy members are joined from both sides of front side and back side of the aluminum alloy target members. (Fig. 12A)

Regarding claim 14, Thomas et al. teach adjacent butted parts are joined in the same moving direction of a probe from a start point to an end point. (See Fig. 12A)

Regarding claim 15, Thomas et al. teach adjacent abutted parts are joined in the opposite moving direction of a probe from the other, from a starting point to an end point. (See Fig. 12A)

Regarding claim 16, Thomas et al. teach a traveling distance per revolution of the probe is 0.5 to 1.4 mm. (Column 7 lines 50-65)

The differences between Thomas et al. and the present claims are that using an alloy of aluminum as the target material is not discussed (Claims 1, 7, 8, 12, 18), using joined target plates as a sputtering target material (Claims 1, 7, 8, 12, 18), the joint including dispersed precipitated with diameters of 10 microns or smaller is not discussed (Claim 2), the aluminum alloy comprising at least 0.5 to 7.0 at% of one or more elements selected from the group consisting of nickel, cobalt, and iron is not discussed (Claim 3), the aluminum alloy further comprising 0.1 to 3.0 at% carbon is not discussed (Claim 4), the aluminum alloy further including 0.5 to 2.0 at% silicon is not discussed (Claim 5), the aluminum alloy further including 0.1 to 3.0 atomic % neodymium is not discussed (Claim 6), the joint having blow holes with diameters of 500 microns or smaller in an amount of 0.01-0.1 holes/cm2 is not discussed (Claim 7), the joint not having blow holes with diameters exceeding 500 microns is not discussed

(Claim 8), the joint including dispersed precipitated with diameters of 10 microns or smaller is not discussed (Claim 9), the aluminum alloy comprising at least 0.5 to 7.0 at% of one or more elements selected from the group consisting of nickel, cobalt, and iron is not discussed (Claim 10), the joint including dispersed precipitated with diameters of 10 microns or smaller is not discussed (Claim 19), and the aluminum alloy comprising at least 0.5 to 7.0 at% of one or more elements selected from the group consisting of nickel, cobalt, and iron is not discussed (Claim 20).

Regarding using an alloy of aluminum as the target material (Claims 1, 7, 8, 12, 18), Ishigami et al. teach using an alloy of aluminum as the target material. (Column 3 lines 29-49)

Regarding using joined target plates as a sputtering target material (Claims 1, 7, 8, 12, 18), Morikawa et al. teach using joined target plates as a sputtering target. (See Abstract)

Regarding claim 2, since Thomas et al. teach utilizing friction stir butt welding the joint will include dispersed precipitates with diameters of 10 microns or smaller. (See Thomas et al. discussed above)

Regarding claim 3, Ishigami et al. teach an aluminum alloy having at least 0.5 to 7.0 at% of one or more elements selected from the group consisting of nickel, cobalt and iron. (Column 3 lines 29-49)

Regarding claim 4, Ishigami et al. teach an aluminum alloy further including 0.1 to 3.0 at% carbon. (Column 3 lines 29-49)

Regarding claim 5, Ishigami et al. teach the aluminum alloy further including 0.5 to 2.o at % Si. (Column 3 lines 29-49)

Regarding claim 6, Ishigami et al. teach the aluminum alloy further including 0.1 to 3.0 at% Nd. (Column 3 lines 29-49)

Regarding claim 7, since Thomas et al. teach utilizing friction stir butt welding the joint will have blow holes with diameters of 500 microns or smaller in an amount of 0.01-0.1 holes/cm2.

Regarding claim 8, Since Thomas et al. teach utilizing friction stir butt welding the joint will have blow holes with diameters exceeding 500 microns.

Regarding claim 9, Since Thomas et al. teach utilizing friction stir butt welding the joint will include dispersed precipitates with diameters of 10 microns or smaller. (See Thomas et al. discussed above)

Regarding claim 10, Ishigami et al. teach an aluminum alloy having at least 0.5 to 7.0 at% of one or more elements selected from the group consisting of nickel, cobalt and iron. (Column 3 lines 29-49)

Regarding claim 19, Since Thomas et al. teach utilizing friction stir butt welding the joint will include dispersed precipitates with diameters of 10 microns or smaller. (See Thomas et al. discussed above)

Regarding claim 20, Ishigami et al. teach an aluminum alloy having at least 0.5 to 7.0 at% of one or more elements selected from the group consisting of nickel, cobalt and iron. (Column 3 lines 29-49)

The motivation for utilizing the features of Ishigami et al. is that it allows for forming films by sputtering in a dust free manner. (See Ishigami et al. Abstract)

The motivation for utilizing the features of Morikawa is that it improves the yield of a sputtering target. (See Morikawa et al. Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Thomas et al. by utilizing the features of Ishigami et al. and Morikawa because it allows for forming films by sputtering in a dust free manner and improving the yield of a sputtering target.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thomas et al. in view of Ishigami et al. and Morikawa as applied to claims 1-16 and 18-20 above, and further in view of Ueno et al. (Japan 11-106905).

The difference not yet discussed is the relative density of the target. (Claim 17)

Regarding claim 17, Ueno et al. teach the target to have a relative density of 99%. (See Abstract)

The motivation for utilizing the features of Ueno et al. is that it allows production of a target of high deflective strength. (See Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at time the invention was made to have utilized the features of Ueno et al. because it allows production of a target of high deflective strength.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M-Th with every Friday off..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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